



# Volunteer Lake Assessment Program Individual Lake Reports

## SUNAPEE LAKE, SUNAPEE, NH

### MORPHOMETRIC DATA

Watershed Area (Ac.):	28,863	Max. Depth (m):	31.9	Flushing Rate (yr <sup>-1</sup> )	0.3
Surface Area (Ac.):	4090	Mean Depth (m):	11.4	P Retention Coef:	0.7
Shore Length (m):	47,600	Volume (m <sup>3</sup> ):	188,150,000	Elevation (ft):	1092

### TROPHIC CLASSIFICATION

Year	Trophic class
1995	OLIGOTROPHIC
2006	OLIGOTROPHIC

### KNOWN EXOTIC SPECIES

Variable Milfoil

The Waterbody Report Card tables are generated from the DRAFT 2014 305(b) report on the status of N.H. waters, and are based on data collected from 2004-2013. Detailed waterbody assessment and report card information can be found at [www.des.nh.gov/organizations/divisions/water/wmb/swqa/index.htm](http://www.des.nh.gov/organizations/divisions/water/wmb/swqa/index.htm)

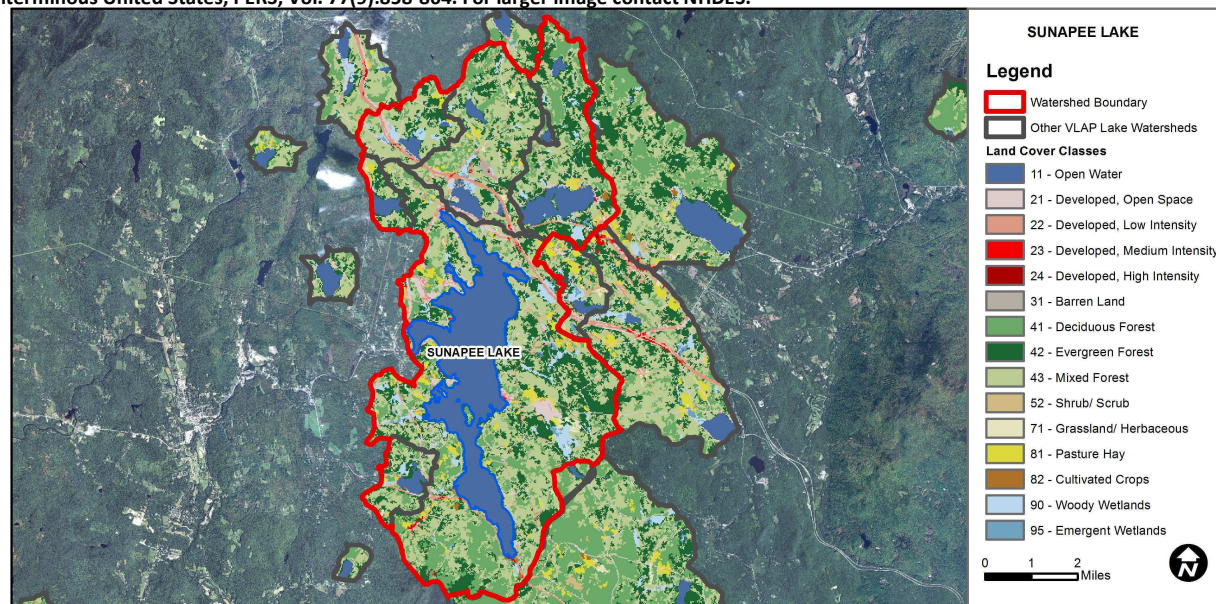
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	The calculated median is from 5 or more samples and is < indicator and > 1/2 indicator and the chlorophyll a indicator is okay.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Oxygen, Dissolved	Bad	There are >10% of samples (minimum of 2), exceeding criteria with one or more samples considered large exceedance.
	Dissolved oxygen satura	Slightly Bad	There are >10% of samples (minimum of 2), exceeding criteria.
	Chlorophyll-a	Very Good	The calculated median is from 5 or more samples and is <= 1/2 indicator.
Primary Contact Recreation	Escherichia coli	Encouraging	There are no geometric means or there are > 2 single samples but those samples are within 75% of the geometric means criteria. More data needed.
	Chlorophyll-a	Very Good	There are a total of at least 10 samples with 0 exceedances of indicator.

### BEACH PRIMARY CONTACT ASSESSMENT STATUS

SUNAPEE LAKE - DEPOT BEACH	Escherichia coli	Very Good	Where there are no geometric means, all bacteria samples are < 75% of the geometric mean. Where there are geometric means all single bacteria samples are < the SSMC and all geometric means are < geometric mean criteria.
SUNAPEE LAKE - GEORGES MILL TOWN BEACH	Escherichia coli	Very Good	Where there are no geometric means, all bacteria samples are < 75% of the geometric mean. Where there are geometric means all single bacteria samples are < the SSMC and all geometric means are < geometric mean criteria.
SUNAPEE LAKE - SUNAPEE STATE PARK BEACH	Escherichia coli	Bad	There are >=1 exceedance(s) of the geometric mean and/or >=2 single sample criterion exceedances. One or more exceedance is >2X criteria.
SUNAPEE LAKE - BLODGETT'S LANDING BEACH	Escherichia coli	Bad	There are >=1 exceedance(s) of the geometric mean and/or >=2 single sample criterion exceedances. One or more exceedance is >2X criteria.
SUNAPEE LAKE - DEWEY (TOWN) BEACH	Escherichia coli	Slightly Bad	There are >=1 exceedance(s) of the geometric mean and/or >=2 single sample criterion exceedances. Exceedances are <2X criteria.

### WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	17.9	Barren Land	0.18	Grassland/Herbaceous	0.44
Developed-Open Space	4.66	Deciduous Forest	12.49	Pasture Hay	2.59
Developed-Low Intensity	2.83	Evergreen Forest	21.94	Cultivated Crops	0.15
Developed-Medium Intensity	0.24	Mixed Forest	31.84	Woody Wetlands	3.2
Developed-High Intensity	0.01	Shrub-Scrub	1.14	Emergent Wetlands	0.3



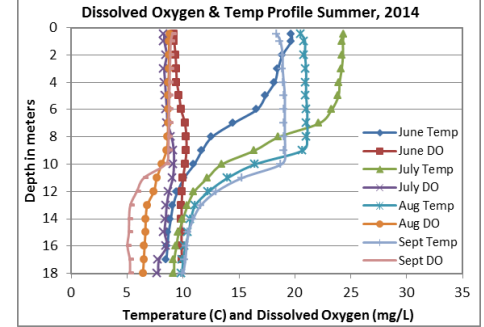
# VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

## LAKE SUNAPEE, STN 200, SUNAPEE, NH

### 2014 DATA SUMMARY

#### OBSERVATIONS AND RECOMMENDATIONS (Refer to Table 1 and Historical Deep Spot Data Graphics)

- ◆ **CHLOROPHYLL-A:** Chlorophyll levels were low in June, decreased slightly in July, increased in August, and then remained stable in September. Average chlorophyll levels decreased from 2013 and were much less than the state median. Historical trend analysis indicates stable chlorophyll levels since monitoring began.
- ◆ **CONDUCTIVITY/CHLORIDE:** Conductivity remained slightly greater than the state median and was stable with 2013. Historical trend analysis indicates significantly increasing (worsening) epilimnetic (upper water layer) conductivity since monitoring began. However since 2006, epilimnetic conductivity has stabilized at a level below 100.0 uS/cm.
- ◆ **TOTAL PHOSPHORUS:** Epilimnetic phosphorus levels were stable and low from June to September. Average epilimnetic phosphorus was stable with 2013 and much less than the state median. Historical trend analysis indicates stable epilimnetic phosphorus since monitoring began. Metalimnetic (middle water layer) and Hypolimnetic (lower water layer) phosphorus levels were slightly higher in June following spring turnover and then decreased and remained stable from July to September.
- ◆ **TRANSPARENCY:** Transparency measured with the viewscope fluctuated slightly between 7.5 to 9.0 meters from June to September. Average transparency was slightly lower than 2013 but remained much higher (better) than the state median. Historical trend analysis indicates stable transparency since monitoring began.
- ◆ **TURBIDITY:** Epilimnetic turbidity was low in June, increased to average levels in July, and then decreased to low levels in August and September. Metalimnetic turbidity was low from June to August, and then increased in September likely due to algal growth. Hypolimnetic turbidity was low in June, increased to average levels in July and August, and then decreased in September.
- ◆ **pH:** Epilimnetic pH fluctuated below the desirable range 6.5-8.0 units. Metalimnetic and Hypolimnetic pH were generally less than desirable on each sampling event. Historical trend analysis indicates stable epilimnetic pH since monitoring began.
- ◆ **RECOMMENDED ACTIONS:** Epilimnetic conductivity has significantly increased since monitoring began, however has stabilized since 2006. Continue to educate local and state road agents, lake and watershed property owners on utilizing best practices when applying winter de-icing products. Education information can be found at [www.t2.unh.edu/green-snowpro-training-and-certification](http://www.t2.unh.edu/green-snowpro-training-and-certification). Conduct chloride monitoring to establish a baseline date set for the lake. Keep up the great work!



**NH Water Quality Standards:** Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.

**Chloride:** > 230 mg/L (chronic)

**E. coli:** > 88 cts/100 mL – public beach

**E. coli:** > 406 cts/100 mL – surface waters

**Turbidity:** > 10 NTU above natural level

**pH:** between 6.5-8.0 (unless naturally occurring)

Station Name	Table 1. 2014 Average Water Quality Data for SUNAPEE LAKE, STN 200						
	Alk. mg/l	Chlor-a ug/l	Cond. uS/cm	Total P ug/l	Trans. m	Turb. ntu	pH
Epilimnion	5.35	1.23	90.1	5	7.89	0.72	6.54
Metalimnion			90.4	6		0.75	6.36
Hypolimnion			92.2	6		0.79	6.11

**NH Median Values:** Median values for specific parameters generated from historic lake monitoring data.

**Alkalinity:** 4.9 mg/L

**Chlorophyll-a:** 4.58 mg/m<sup>3</sup>

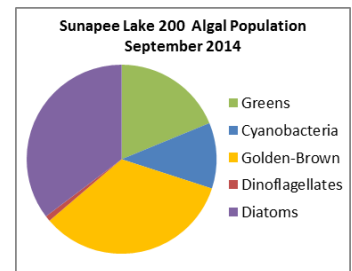
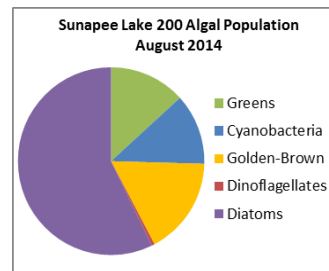
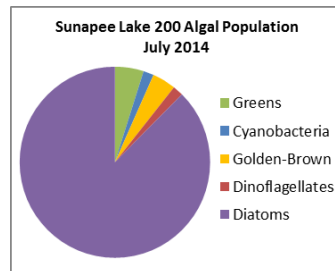
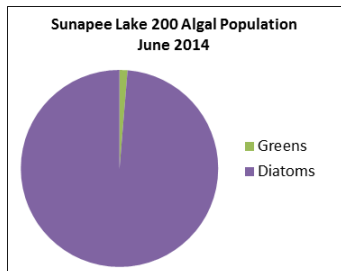
**Conductivity:** 40.0 uS/cm

**Chloride:** 4 mg/L

**Total Phosphorus:** 12 ug/L

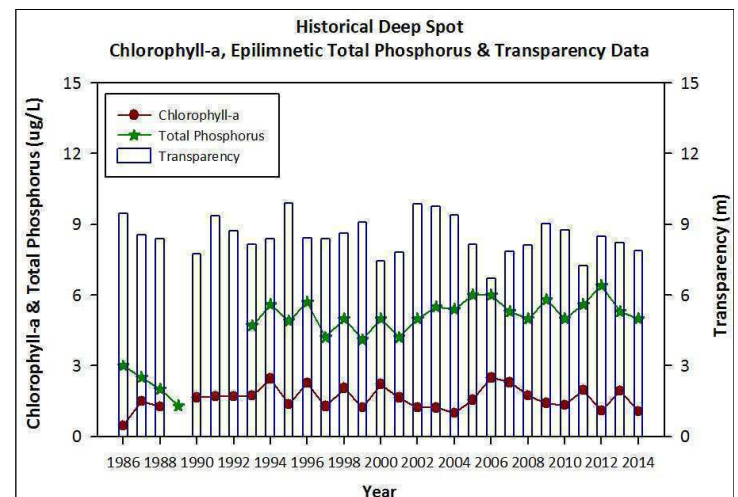
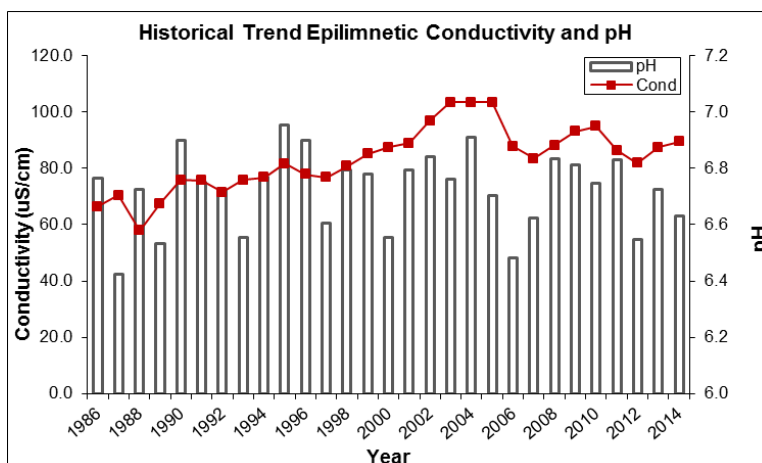
**Transparency:** 3.2 m

**pH:** 6.6



#### HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Worsening	Data significantly increasing.	Chlorophyll-a	Stable	Trend not significant; data show low variability.
pH (epilimnion)	Stable	Trend not significant; data show low variability.	Transparency	Stable	Trend not significant; data show low variability.
			Phosphorus (epilimnion)	Stable	Trend not significant; data show low variability.







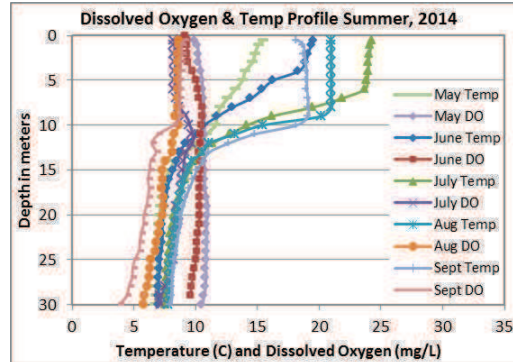
# VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

## LAKE SUNAPEE, STN 210, SUNAPEE, NH

### 2014 DATA SUMMARY

#### OBSERVATIONS AND RECOMMENDATIONS (Refer to Table 1 and Historical Deep Spot Data Graphics)

- ◆ **CHLOROPHYLL-A:** Chlorophyll levels were elevated above the state median in June, decreased to low levels in July, and then remained approximately equal to 2.0 ug/L into September. Average chlorophyll levels increased from 2013 yet remained less than the state median. Historical trend analysis indicates relatively stable chlorophyll with moderate variability between years.
- ◆ **CONDUCTIVITY/CHLORIDE:** Conductivity remained slightly greater than the state median and was stable with 2013. Historical trend analysis indicates significantly increasing (worsening) epilimnetic (upper water layer) conductivity since monitoring began. However, since 2006 epilimnetic conductivity has stabilized at a level below 100.0 uS/cm.
- ◆ **TOTAL PHOSPHORUS:** Epilimnetic phosphorus remained stable and low from May to September. Average epilimnetic phosphorus was stable with 2013 and much less than the state median. Historical trend analysis indicates stable epilimnetic phosphorus since monitoring began, and particularly since 2004. Metalimnetic (middle water layer) phosphorus remained stable and low. Hypolimnetic (lower water layer) phosphorus was stable and low through August and then increased in September.
- ◆ **TRANSPARENCY:** Transparency was below average (worse) in May due to the elevated algal growth, and then increased (improved) from June to September. Average transparency was slightly lower than 2013 but remained much higher (better) than the state median.
- ◆ **TURBIDITY:** Epilimnetic turbidity was low in May and June, increased to average levels in July, and then decreased to low levels in August and September. Metalimnetic turbidity was slightly above average for that station in all months except June. Hypolimnetic turbidity was low from May through July and then increased to slightly above average levels in August and September.
- ◆ **pH:** Epilimnetic pH was generally within the desirable range 6.5-8.0, however metalimnetic and hypolimnetic pH was generally less than the desirable range. Historical trend analysis indicates relatively stable epilimnetic pH with moderate variability between years.
- ◆ **RECOMMENDED ACTIONS:** Epilimnetic conductivity has significantly increased since monitoring began, however has stabilized since 2006. Continue to educate local and state road agents, lake and watershed property owners on utilizing best practices when applying winter de-icing products. Education information can be found at [www.t2.unh.edu/green-snowpro-training-and-certification](http://www.t2.unh.edu/green-snowpro-training-and-certification). Conduct chloride monitoring to establish a baseline date set for the lake. Keep up the great work!



**NH Water Quality Standards:** Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.

**Chloride:** > 230 mg/L (chronic)

**E. coli:** > 88 cts/100 mL – public beach

**E. coli:** > 406 cts/100 mL – surface waters

**Turbidity:** > 10 NTU above natural level

**pH:** between 6.5-8.0 (unless naturally occurring)

**NH Median Values:** Median values for specific parameters generated from historic lake monitoring data.

**Alkalinity:** 4.9 mg/L

**Chlorophyll-a:** 4.58 mg/m<sup>3</sup>

**Conductivity:** 40.0 uS/cm

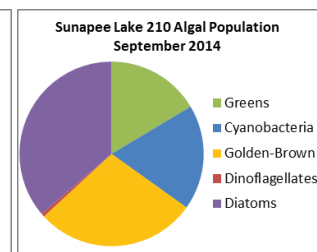
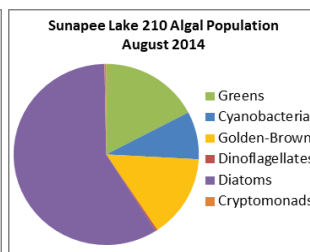
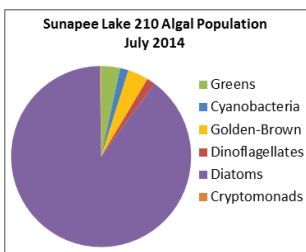
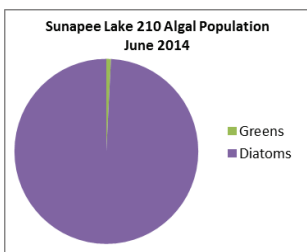
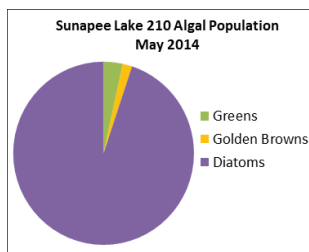
**Chloride:** 4 mg/L

**Total Phosphorus:** 12 ug/L

**Transparency:** 3.2 m

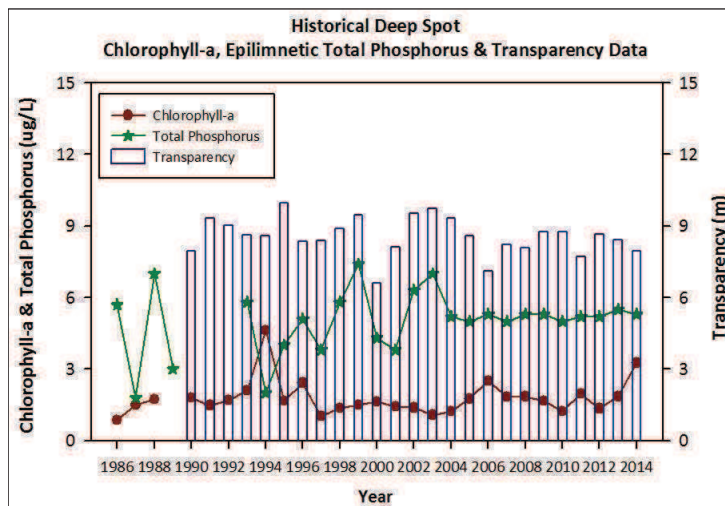
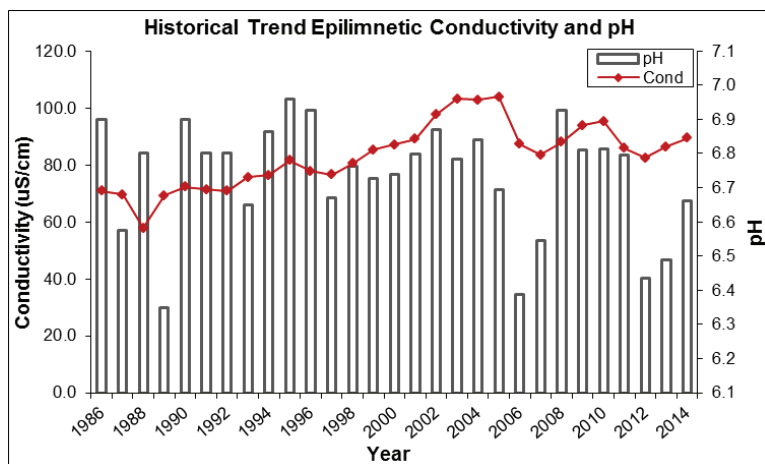
**pH:** 6.6

Station Name	Table 1. 2014 Average Water Quality Data for SUNAPEE LAKE, STN 210						
	Alk. mg/l	Chlor-a ug/l	Cond. uS/cm	Total P ug/l	Trans. m	Turb. ntu	pH
Epilimnion	5.88	2.83	89.3	5	7.94	0.8	6.65
Metalimnion			89.6	6		1.01	6.5
Hypolimnion			90.5	6		0.93	6.32



#### HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Worsening	Data significantly increasing.	Chlorophyll-a	Stable	Trend not significant; data moderately variable.
pH (epilimnion)	Stable	Trend not significant; data moderately variable.	Transparency	Stable	Trend not significant; data moderately variable.
			Phosphorus (epilimnion)	Stable	Trend not significant; data show low variability.





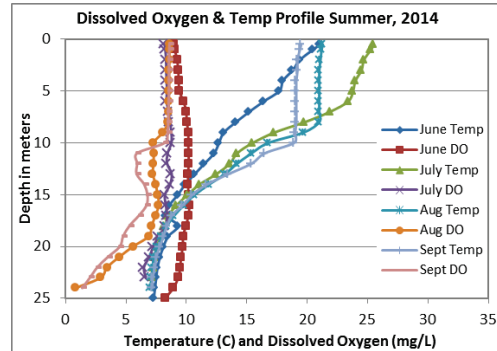
## VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

### SUNAPEE LAKE, STN 220, SUNAPEE, NH

### 2014 DATA SUMMARY

#### OBSERVATIONS AND RECOMMENDATIONS (Refer to Table 1 and Historical Deep Spot Data Graphics)

- ◆ **CHLOROPHYLL-A:** Chlorophyll levels were stable and low from June to July, increased slightly in August, and the decreased in September. Average chlorophyll levels remained stable with 2013 and was much less than the state median. Historical trend analysis indicates relatively stable chlorophyll with moderate variability between years.
- ◆ **CONDUCTIVITY/CHLORIDE:** Conductivity remained slightly greater than the state median and increased slightly from 2013. Historical trend analysis indicates stable epilimnetic (upper water layer) conductivity since monitoring began.
- ◆ **TOTAL PHOSPHORUS:** Epilimnetic and Metalimnetic (middle water layer) phosphorus levels remained stable and low from June to September. Average epilimnetic phosphorus remained stable with 2013 and was much less than the state median. Historical trend analysis indicates relatively stable epilimnetic phosphorus with moderate variability between years. Hypolimnetic (lower water layer) phosphorus levels were slightly higher in June following spring turnover and then decreased to low levels and remained stable from July to September.
- ◆ **TRANSPARENCY:** Transparency measured with the viewscope remained stable from June to July, decreased slightly (worsened) in August with the higher algal growth, and the increased greatly (improved) in September when algal growth was lowest. Average transparency was slightly lower than 2013 but remained much higher (better) than the state median. Historical trend analysis indicates stable transparency since monitoring began.
- ◆ **TURBIDITY:** Epilimnetic turbidity was low in June, increased to above average levels in July, and then decreased and remained stable from August to September. Metalimnetic turbidity was stable and low from June to September. Hypolimnetic turbidity was low in June, increased slightly in July and remained stable through September.
- ◆ **pH:** Epilimnetic pH was within the desirable range 6.5-8.0 units, however has fluctuated below the desirable range in recent years. Metalimnetic and hypolimnetic pH was less than desirable. Historical trend analysis indicates relatively stable epilimnetic pH with moderate variability between years.
- ◆ **RECOMMENDED ACTIONS:** Conduct chloride monitoring to establish a baseline data set for the lake. The stable water quality trends are a great sign especially with the increased frequency and intensity of storm events and associated stormwater runoff. Keep up the great work!



**NH Water Quality Standards:** Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.

**Chloride:** > 230 mg/L (chronic)

**E. coli:** > 88 cts/100 mL – public beach

**E. coli:** > 406 cts/100 mL – surface waters

**Turbidity:** > 10 NTU above natural level

**pH:** between 6.5-8.0 (unless naturally occurring)

**NH Median Values:** Median values for specific parameters generated from historic lake monitoring data.

**Alkalinity:** 4.9 mg/L

**Chlorophyll-a:** 4.58 mg/m<sup>3</sup>

**Conductivity:** 40.0 uS/cm

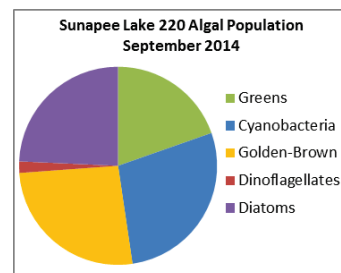
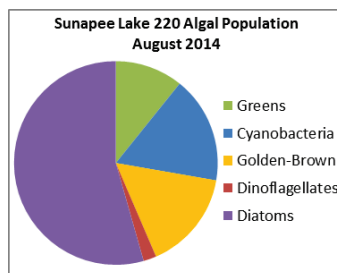
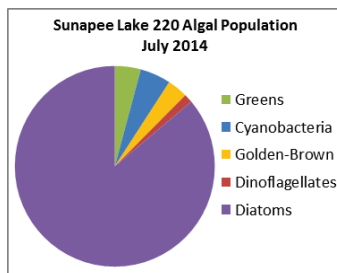
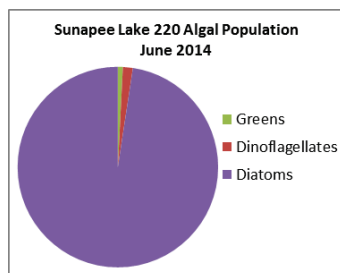
**Chloride:** 4 mg/L

**Total Phosphorus:** 12 ug/L

**Transparency:** 3.2 m

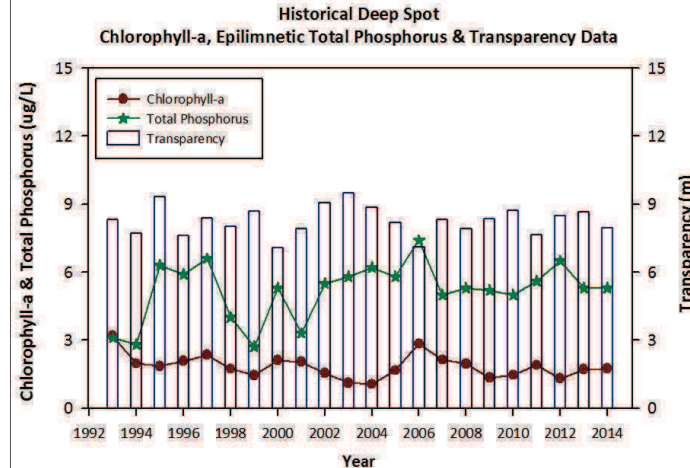
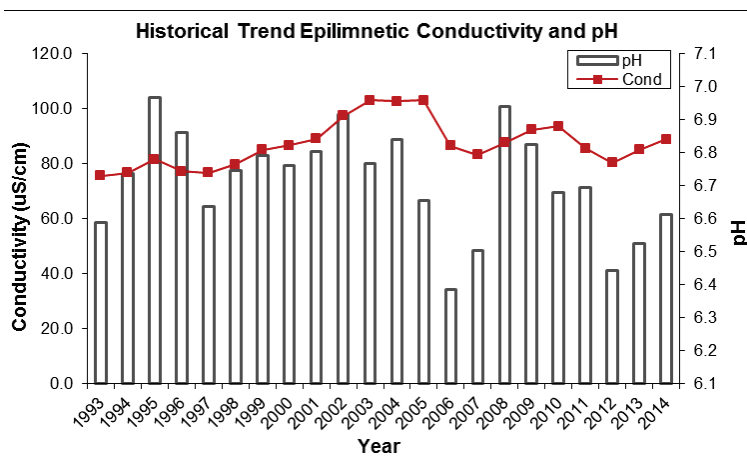
**pH:** 6.6

Station Name	Table 1. 2014 Average Water Quality Data for SUNAPEE LAKE, STN 220						
	Alk. mg/l	Chlor-a ug/l	Cond. uS/cm	Total P ug/l	Trans. m VS	Turb. ntu	pH
Epilimnion	5.43	1.74	88.8	5	7.94	0.65	6.64
Metalimnion			88.6	5		0.64	6.29
Hypolimnion			89.2	6		0.90	6.09



#### HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Stable	Trend not significant; data show low variability.	Chlorophyll-a	Stable	Trend not significant; data moderately variable.
pH (epilimnion)	Stable	Trend not significant; data moderately variable.	Transparency	Stable	Trend not significant; data show low variability.
			Phosphorus (epilimnion)	Stable	Trend not significant; data moderately variable.





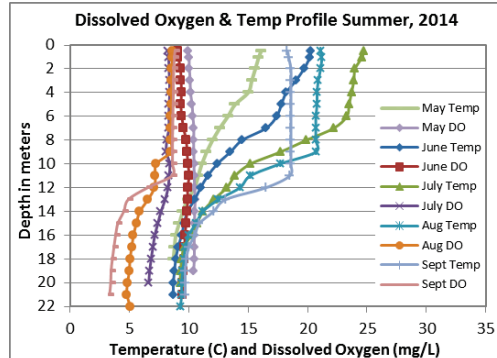
## VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

### SUNAPEE LAKE, STN 230, SUNAPEE, NH

#### 2014 DATA SUMMARY

##### OBSERVATIONS AND RECOMMENDATIONS (Refer to Table 1 and Historical Deep Spot Data Graphics)

- **CHLOROPHYLL-A:** Chlorophyll levels were low in June, increased to higher levels in July and August, and then decreased to low levels in September. Average chlorophyll increased slightly from 2013 and was much less than the state median. Historical trend analysis indicates stable chlorophyll levels since monitoring began.
- **CONDUCTIVITY/CHLORIDE:** Conductivity remained slightly greater than the state median and increased slightly from 2013. Historical trend analysis indicates significantly increasing (worsening) epilimnetic (upper water layer) conductivity since monitoring began. However since 2006, epilimnetic conductivity has stabilized at a level below 100 uS/cm.
- **TOTAL PHOSPHORUS:** Epilimnetic and Metalimnetic (middle water layer) phosphorus levels remained stable and low from June to September. Average epilimnetic phosphorus decreased slightly from 2013 and was much less than the state median. Historical trend analysis indicates stable epilimnetic phosphorus since monitoring began. Hypolimnetic (lower water layer) phosphorus was slightly higher in June following spring turnover and decreased as the summer progressed.
- **TRANSPARENCY:** Transparency measured with the viewscope was below average (low) in May and then increased (improved) to high levels in June and July, decreased (worsened) slightly in August, and then increased slightly in September. Average transparency was less than (worse) 2013 but remained much better (higher) than the state median. Historical trend analysis indicates stable transparency since monitoring began.
- **TURBIDITY:** Epilimnetic turbidity remained stable and low from June to September. Metalimnetic turbidity was slightly above average from June to September and likely due to algal growth in this layer. Hypolimnetic turbidity was slightly above average in June following spring turnover and then decreased steadily as the summer progressed.
- **pH:** Epilimnetic pH was within the desirable range 6.5-8.0 units, however has fluctuated below the desirable range in recent years. Metalimnetic and Hypolimnetic pH were less than desirable. Historical trend analysis indicates relatively stable epilimnetic pH with moderate variability between years.
- **RECOMMENDED ACTIONS:** Epilimnetic conductivity has significantly increased since monitoring began, however has stabilized since 2006. Continue to educate local and state road agents, lake and watershed property owners on utilizing best practices when applying winter de-icing products. Education information can be found at [www.t2.unh.edu/green-snowpro-training-and-certification](http://www.t2.unh.edu/green-snowpro-training-and-certification). Conduct chloride monitoring to establish a baseline date set for the lake. Keep up the great work!



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**Chloride:** > 230 mg/L (chronic)

**E. coli:** > 88 cts/100 mL – public beach

**E. coli:** > 406 cts/100 mL – surface waters

**Turbidity:** > 10 NTU above natural level

**pH:** between 6.5-8.0 (unless naturally occurring)

**NH Median Values:** Median values for specific parameters generated from historic lake monitoring data.

**Alkalinity:** 4.9 mg/L

**Chlorophyll-a:** 4.58 mg/m<sup>3</sup>

**Conductivity:** 40.0 uS/cm

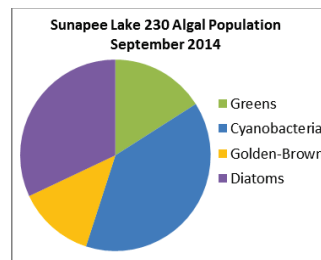
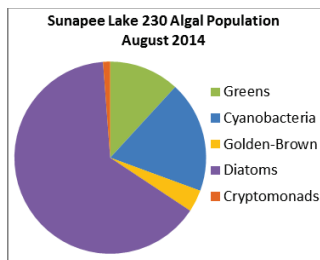
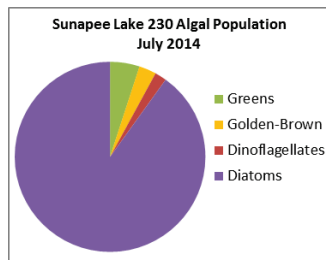
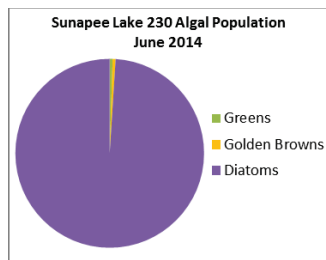
**Chloride:** 4 mg/L

**Total Phosphorus:** 12 ug/L

**Transparency:** 3.2 m

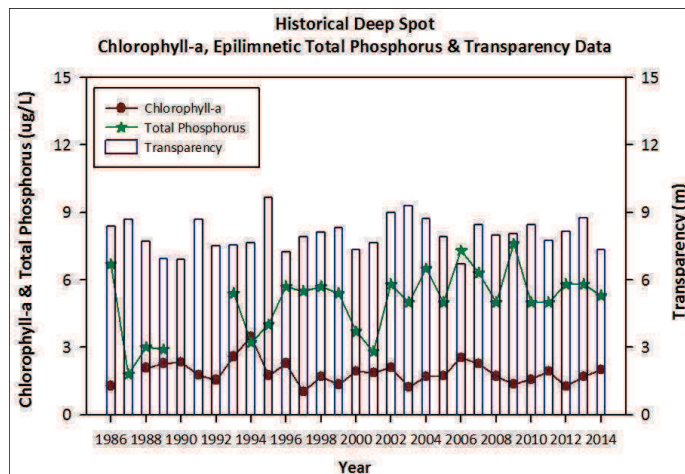
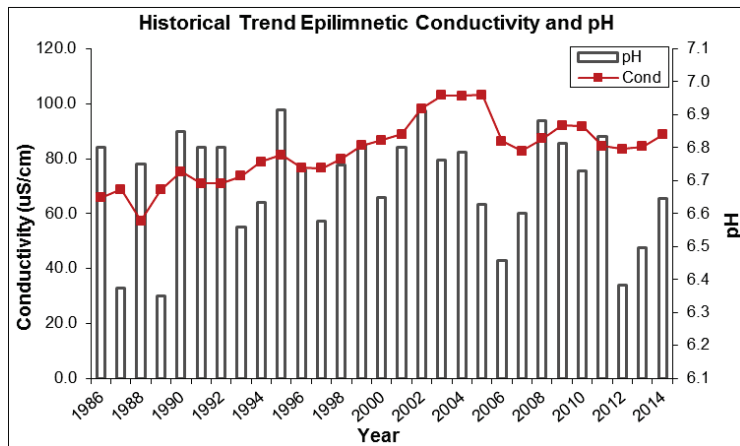
**pH:** 6.6

Station Name	Table 1. 2014 Average Water Quality Data for SUNAPEE LAKE, STN 220						
	Alk. mg/l	Chlor-a ug/l	Cond. uS/cm	Total P ug/l	Trans. m VS	Turb. ntu	pH
Epilimnion	5.53	2.00	88.8	5	7.33	0.56	6.65
Metalimnion			88.4	6		1.22	6.37
Hypolimnion			88.4	6		0.99	6.16



##### HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Worsening	Data significantly increasing.	Chlorophyll-a	Stable	Trend not significant; data show low variability.
pH (epilimnion)	Stable	Trend not significant; data moderately variable.	Transparency	Stable	Trend not significant; data show low variability.
			Phosphorus (epilimnion)	Stable	Trend not significant; data show low variability.







# VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

## LAKE SUNAPEE, STNS 010, 020, 030, 070, 080, 090, 100.0, & 110

### 2014 DATA SUMMARY

#### OBSERVATIONS AND RECOMMENDATIONS (Refer to Table 1 and Historical Deep Spot Data Graphics)

- ◆ **CHLOROPHYLL-A:** Chlorophyll levels fluctuated between 1.00 and 2.50 ug/L and were in a low range and well below the state median. The 2014 average chlorophyll levels remained stable from 2013. Historical trend analysis indicates relatively stable chlorophyll levels with moderate variability between years at all stations.
- ◆ **CONDUCTIVITY/CHLORIDE:** Conductivity ranged from 85.0 to 105.0 uS/cm in 2014. Average conductivity levels remain slightly greater than the state median. Historical trend analysis indicates significantly increasing (worsening) conductivity levels at Stns. 010, 020, 030, 070, 080, 090, and 110. Historical trend analysis indicates stable conductivity at Stn. 100.1.
- ◆ **TOTAL PHOSPHORUS:** Phosphorus levels at all stations were higher in June following spring snowmelt, rains and lake turnover. Phosphorus levels decreased to low levels for the remainder of the season at Stns. 010, 080, 090, and 110. Phosphorus levels remained higher in July at Stns. 020 and 030 and then decreased to low levels in August and September. Phosphorus levels at Stn. 070 decreased slightly in July and August, but then increased slightly in September. Phosphorus levels at Stn. 100.1 were elevated on each sampling event and were much greater than the other stations. Historical trend analysis indicates highly variable phosphorus levels at Stns. 010 and 020 since monitoring began. Historical trend analysis also indicates significantly increasing (worsening) phosphorus levels at Stns. 030, 070, 080, 090, 100.1, and 110. Phosphorus levels at all stations have remained > 5.0 ug/L since 2001, and particularly have remained at higher levels since 2005.
- ◆ **TRANSPARENCY:** Average transparency decreased (worsened) from 2013 at Stns. 030 and 100.1. Field data indicates wave conditions may have contributed to the lower transparency at Stn. 030. Transparency was lower in July at Stn. 100.1, water levels were high and there had been recent rainfall which could have contributed to the lower transparency, however transparency improved and the Secchi disk was visible on the lake bottom in September. The Secchi disk was also visible on the lake bottom on each sampling event at Stns. 020, 070 and 080, and from June to August at Stn. 090. An algal bloom at Stn. 090 led to lower transparency in September. Average transparency increased (improved) from 2013 at Stns. 010 and 110 despite the Stns. experiencing low to moderate Gloeotrichia growth. Historical trend analysis indicates stable transparency at Stns. 010, 020, 030, 070, 080, 090, and 100.0 with low to moderate variability between years. Historical trend analysis indicates significantly decreasing (worsening) transparency at Stn. 110 since monitoring began.
- ◆ **TURBIDITY:** Turbidities at all Stns. were generally elevated in June and July corresponding with the higher phosphorus levels. Spring snowmelt, above average rainfall in May, and pollen could all have contributed to the elevated turbidities. Turbidity was also slightly elevated in August at Stns. 010 and 080 likely due to Gloeotrichia growth. Turbidities were also slightly higher, though not in an elevated range, in September at Stns. 010, 020, 070, and 100.1 potentially due to recent storm events. Turbidity was elevated on each sampling event at Stn. 030.
- ◆ **pH:** Average pH levels improved at all Stns. In 2014 and were within the desirable range of 6.5-8.0 units. Historical trend analysis indicates relatively stable pH with moderate variability between years at all Stns.
- ◆ **RECOMMENDED ACTIONS:** Phosphorus levels at all stations have increased, some significantly, particularly since 2005. Evaluate potential sources of phosphorus pollution in the watershed. The increased frequency and intensity of storm events has likely played a role in the increasing phosphorus levels. Educate lake residents on ways to reduce stormwater runoff from their properties. Become a partner with DES' Soak Up The Rain Program to assist lake front property owners with stormwater management projects. In turn, this will help to reduce nutrients input from residential properties. Visit [www.soaknh.org](http://www.soaknh.org) for more information and to sign up. Conduct chloride monitoring to establish a baseline data set for the lake as winter road salt usage is likely a contributing factor to the significantly increasing conductivity levels. Keep up the great work!

Station Name	Table 1. 2014 Average Water Quality Data for NEARSHORE STNS					
	Chlor-a ug/l	Cond. uS/cm	Total P ug/l	Trans. m VS	Turb. ntu	pH
10	2.02	96.0	6	7.88	1.02	6.80
20	1.68	94.5	8	4.30	1.17	6.81
30	1.58	96.0	10	7.78	2.02	6.67
70	1.41	91.2	9	6.40	1.17	6.83
80	1.16	89.2	5	2.00	0.96	6.73
90	1.47	88.3	6	7.05	0.92	6.72
100.1	1.16	93.6	21	7.10	1.03	7.00
110	1.62	93.3	6	6.38	0.97	6.79

**NH Water Quality Standards:** Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.

**Chloride:** > 230 mg/L (chronic)

**E. coli:** > 88 cts/100 mL – public beach

**E. coli:** > 406 cts/100 mL – surface waters

**Turbidity:** > 10 NTU above natural level

**pH:** between 6.5-8.0 (unless naturally occurring)

**NH Median Values:** Median values for specific parameters generated from historic lake monitoring data.

**Alkalinity:** 4.9 mg/L

**Chlorophyll-a:** 4.58 mg/m<sup>3</sup>

**Conductivity:** 40.0 uS/cm

**Chloride:** 4 mg/L

**Total Phosphorus:** 12 ug/L

**Transparency:** 3.2 m

**pH:** 6.6

#### HISTORICAL WATER QUALITY TREND ANALYSIS

Station	Parameter	Trend	Explanation
010	Chlorophyll-a	Stable	Data show moderate variability.
	Transparency	Stable	Data show moderate variability.
	Phosphorus	Stable	Data show high variability.
	Conductivity	<b>Worsening</b>	<b>Data significantly increasing.</b>
	pH	Stable	Data show moderate variability.
020	Chlorophyll-a	Stable	Data show moderate variability.
	Transparency	Stable	Data show low variability.
	Phosphorus	Stable	Data show high variability.
	Conductivity	<b>Worsening</b>	<b>Data significantly increasing.</b>
	pH	Stable	Data show moderate variability.
030	Chlorophyll-a	Stable	Data show moderate variability.
	Transparency	Stable	Data show low variability.
	Phosphorus	<b>Worsening</b>	<b>Data significantly increasing.</b>
	Conductivity	<b>Worsening</b>	<b>Data significantly increasing.</b>
	pH	Stable	Data show moderate variability.
070	Chlorophyll-a	Stable	Data show moderate variability.
	Transparency	Stable	Data show low variability.
	Phosphorus	<b>Worsening</b>	<b>Data significantly increasing.</b>
	Conductivity	<b>Worsening</b>	<b>Data significantly increasing.</b>
	pH	Stable	Data show moderate variability.

Station	Parameter	Trend	Explanation
080	Chlorophyll-a	Stable	Data show moderate variability.
	Transparency	Stable	Data show moderate variability.
	Phosphorus	<b>Worsening</b>	<b>Data significantly increasing.</b>
	Conductivity	<b>Worsening</b>	<b>Data significantly increasing.</b>
	pH	Stable	Data show moderate variability.
090	Chlorophyll-a	Stable	Data show moderate variability.
	Transparency	Stable	Data show low variability.
	Phosphorus	<b>Worsening</b>	<b>Data significantly increasing.</b>
	Conductivity	<b>Worsening</b>	<b>Data significantly increasing.</b>
	pH	Stable	Data show moderate variability.
100.1	Chlorophyll-a	Stable	Data show moderate variability.
	Transparency	Stable	Data show low variability.
	Phosphorus	<b>Worsening</b>	<b>Data significantly increasing.</b>
	Conductivity	Stable	Data show low variability.
	pH	Stable	Data show moderate variability.
110	Chlorophyll-a	Stable	Data show moderate variability.
	Transparency	<b>Worsening</b>	<b>Data significantly decreasing.</b>
	Phosphorus	<b>Worsening</b>	<b>Data significantly increasing.</b>
	Conductivity	<b>Worsening</b>	<b>Data significantly increasing.</b>
	pH	Stable	Data show moderate variability.



## VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

### LAKE SUNAPEE, BLODGETT BROOK SUB-WATERSHED

#### 2014 DATA SUMMARY

#### OBSERVATIONS AND RECOMMENDATIONS *(Refer to Table 1 and Historical Deep Spot Data Graphics)*

- ◆ **CONDUCTIVITY/CHLORIDE:** Conductivity levels from Stn. 1115 (upstream) to Stn. 790 (downstream) do not change significantly and are approximately equal to the state median. However, conductivity levels at Stn. 788 were slightly elevated and greater than the state median.
- ◆ **TOTAL PHOSPHORUS:** Phosphorus levels at Stns. 788, 790, 790.2, and 790.4 were within an average range in 2014 and increased slightly following significant storm events in June, July and October. In particular, Stn. 788 phosphorus levels were slightly elevated in June and light sediment was noted in the sample. Phosphorus levels at Stn. 1115 remained stable and low from May through October.
- ◆ **TURBIDITY:** Turbidity at Stn. 788 was slightly elevated in May and August during low flows but generally remained low. Turbidity was generally low at Stns. 790 and 1115. Turbidity was slightly elevated at Stn. 790.2 in May and June but was likely due to colored water and not from significant storm events prior to sampling as turbidity was not elevated following storm events in July and October. Turbidity was slightly elevated at Stn. 790.4 in October following a significant storm event.
- ◆ **pH:** pH levels at Stns. 790, 790.2, 790.4, and 1115 generally fluctuated below the desirable range 6.5-8.0 units. However pH levels at Stn. 788 were generally within the desirable range and pH levels improved from upstream to downstream.
- ◆ **RECOMMENDED ACTIONS:** Stream water quality was generally good in 2014 considering a majority of sampling events followed significant storm events. This is good news considering the increased frequency and intensity of storm events and resulting increase in stormwater runoff in recent years. Keep up the great work!

Table 1. 2014 Average Water Quality Data for Blodgett Brook Sub-Watershed

Sub-Watershed Name	Station Name	Cond.	Total P	Turb.	pH
		uS/cm	ug/l	ntu	
Blodgett Brook (S. Branch)	788	117.6	13	0.92	6.58
Blodgett Brook (N. Branch)	790	49.8	14	0.94	6.47
Blodgett Brook	790.2	40.6	14	1.11	6.03
Blodgett Brook (S. County Rd.)	790.4	35.4	14	1.08	5.91
Chalk Pond Outlet	1115	52.1	6	0.65	6.28

**NH Median Values:** Median values for specific parameters generated from historic lake monitoring data.

**Alkalinity:** 4.9 mg/L

**Chlorophyll-a:** 4.58 mg/m<sup>3</sup>

**Conductivity:** 40.0 uS/cm

**Chloride:** 4 mg/L

**Total Phosphorus:** 12 ug/L

**Transparency:** 3.2 m

**pH:** 6.6

**NH Water Quality Standards:** Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.

**Chloride:** > 230 mg/L (chronic)

**E. coli:** > 88 cts/100 mL – public beach

**E. coli:** > 406 cts/100 mL – surface waters

**Turbidity:** > 10 NTU above natural level

**pH:** between 6.5-8.0 (unless naturally occurring)



# VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

## LAKE SUNAPEE, CHANDLER BROOK AND JOHNSON BROOK SUB-WATERSHEDS

### 2014 DATA SUMMARY

#### OBSERVATIONS AND RECOMMENDATIONS *(Refer to Table 1 and Historical Deep Spot Data Graphics)*

- ◆ **CONDUCTIVITY/CHLORIDE:** Conductivity levels were slightly elevated and greater than the state median at Stns. 670, 670.5 and 680 and generally increased as the summer progressed and flows decreased. Conductivity levels at Stn. 675 were low in May, increased through September and then decreased in October, and average conductivity was approximately equal to the state median.
- ◆ **TOTAL PHOSPHORUS:** Phosphorus levels were generally stable and in a low to average range at Stns. 670, 675 and 680. Phosphorus levels at Stn. 670.5 were average in May, slightly elevated in June, low in July and August, and then slightly elevated in September and October. An oily sheen was noted in June, and light sediment and/or organic matter was noted in the September and October samples.
- ◆ **TURBIDITY:** Turbidities were slightly elevated at all stations in June and October. Dry weather and low flows likely contributed to June turbidity and stormwater runoff from a significant storm event prior to sampling likely contributed to October turbidity. Overall, average turbidities decreased at all stations in 2014.
- ◆ **pH:** pH levels at Stns. 670, 670.5 and 675 fluctuated below the desirable range 6.5-8.0 units on each sampling event. pH levels at Stn. 680 were low in May, but recovered to the desirable range from June through October.
- ◆ **RECOMMENDED ACTIONS:** Conduct chloride monitoring to assess the contributions of road salt on conductivity levels. Turbidity at all stations was slightly elevated in October following a significant storm event indicating potential erosion from stormwater runoff. The increased frequency and intensity of storm events highlights the importance of managing stormwater runoff in the watershed. Consider becoming a Partner with DES' Soak Up The Rain NH Program. For more information visit [www.soaknh.org](http://www.soaknh.org). Keep up the great work!

Table 1. 2014 Average Water Quality Data for Chandler & Johnson Brooks

Sub-Watershed Name	Station Name	Cond.	Total P	Turb.	pH
		uS/cm	ug/l	ntu	
Chandler Brook	670	139.3	12	1.45	6.46
Chandler Brook	670.5	127.3	19	1.62	6.24
Chandler Brook (Beck Brook)	680	109.8	5	1.42	6.75
Johnson Brook	675	53.3	8	1.39	6.37

**NH Median Values:** Median values for specific parameters generated from historic lake monitoring data.

**Alkalinity:** 4.9 mg/L

**Chlorophyll-a:** 4.58 mg/m<sup>3</sup>

**Conductivity:** 40.0 uS/cm

**Chloride:** 4 mg/L

**Total Phosphorus:** 12 ug/L

**Transparency:** 3.2 m

**pH:** 6.6

**NH Water Quality Standards:** Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.

**Chloride:** > 230 mg/L (chronic)

**E. coli:** > 88 cts/100 mL – public beach

**E. coli:** > 406 cts/100 mL – surface waters

**Turbidity:** > 10 NTU above natural level

**pH:** between 6.5-8.0 (unless naturally occurring)





## VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

### LAKE SUNAPEE, HERRICK COVE SUB-WATERSHED

#### 2014 DATA SUMMARY

##### OBSERVATIONS AND RECOMMENDATIONS (Refer to Table 1 and Historical Deep Spot Data Graphics)

- ◆ **CONDUCTIVITY/CHLORIDE:** Conductivity levels were elevated and much greater than the state median at all stations. Stn. 835 conductivity levels were much greater than the other stations likely due to road salt contributions from major roadways.
- ◆ **TOTAL PHOSPHORUS:** Phosphorus levels at all stations were slightly elevated in 2014, however average phosphorus levels at Stns. 830, 830.15, and 830.2 decreased slightly from 2013 levels. Stn. 830 phosphorus levels were average in May and June when tributary flows were moderate, but then increased to elevated levels from July through September. Tributary flows were low from July through August and samplers noted murky water that contained organic material as reflected in the elevated turbidities. Stn. 830.15 phosphorus levels were average in June and September during moderate flows, but elevated in July and August when water was murky and turbidity was elevated. Stn. 830.2 phosphorus levels were elevated and remained stable from June through August, and then decreased to average levels in September following a significant storm event that flushed the tributary. Stn. 835 phosphorus levels were very low in May, June, August, and September, however they were greatly elevated in July. It is unclear what caused the spike in phosphorus levels, but organic matter may have contributed. Phosphorus levels have remained lower since 2012 at Stns. 830, 830.15 and 830.2, however have remained higher and more variable at Stn. 835.
- ◆ **TURBIDITY:** Turbidity levels at Stn. 830 were average in May and June and elevated from July through September. Low flows and murky water in July and August and a significant storm event in September contributed to elevated turbidities. Stn. 830.15 and 830.2 turbidities were elevated on each sampling event and generally increased from June through August and then decreased in September when the tributaries were flushed from the significant storm event. Stn. 835 turbidity was low except for July when it was slightly elevated and organic matter was noted in the sample.
- ◆ **pH:** pH levels were fluctuated below the desirable range 6.5-8.0 units at Stn. 830, 830.15 and 830.2. pH levels at Stn. 835 were within the desirable range on each sampling event.
- ◆ **RECOMMENDED ACTIONS:** Conductivity has significantly increased at Stns. 830, 830.15 and 835 since monitoring began. Conduct chloride monitoring at all stations to assess the contribution of road salt on the elevated conductivities. Total phosphorus has significantly increased at Stn. 830 since monitoring began, and were particularly high from 2005-2011, however since 2012 phosphorus levels have remained lower. Monitors note significant amount of deadfall and debris in the stream bed at this station which is likely contributing to elevated phosphorus, turbidity and lower pH. Consider obtaining a Wetlands Permit to remove debris from the tributary if deemed necessary to return the site to a more natural state. The increased frequency and intensity of storm events highlights the importance of managing stormwater runoff, particularly from major highways and roadways and to ensure culverts are sized properly to handle large storm events. Keep up the great work!

Table 1. 2014 Average Water Quality Data for Herrick Cove Sub-Watershed

Sub-Watershed Name	Station Name	Cond.	Total P	Turb.	pH
		uS/cm	ug/l	ntu	
Herrick Cove South	830	402.7	26	5.99	6.29
Herrick Cove South	830.15	418.3	33	7.68	5.96
Herrick Cove South	830.2	317.7	39	8.87	6.00
Herrick Cove North	835	783.7	46	0.88	6.87

**NH Median Values:** Median values for specific parameters generated from historic lake monitoring data.

**Alkalinity:** 4.9 mg/L

**Chlorophyll-a:** 4.58 mg/m<sup>3</sup>

**Conductivity:** 40.0 uS/cm

**Chloride:** 4 mg/L

**Total Phosphorus:** 12 ug/L

**Transparency:** 3.2 m

**pH:** 6.6

**NH Water Quality Standards:** Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.

**Chloride:** > 230 mg/L (chronic)

**E. coli:** > 88 cts/100 mL – public beach

**E. coli:** > 406 cts/100 mL – surface waters

**Turbidity:** > 10 NTU above natural level

**pH:** between 6.5-8.0 (unless naturally occurring)



## VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

### LAKE SUNAPEE, LITTLE SUNAPEE LAKE SUB-WATERSHED

#### 2014 DATA SUMMARY

##### OBSERVATIONS AND RECOMMENDATIONS (Refer to Table 1 and Historical Deep Spot Data Graphics)

- ◆ **CONDUCTIVITY/CHLORIDE:** Conductivity was stable and low at Stn. 1410.5 and was much less than the state median. Conductivity was slightly elevated and greater than the state median at Stn. 1420. Conductivity was elevated and much greater than the state median at Stns. 1415 and 1418. These stations receive runoff and roadways and a salt storage facility. Management efforts are currently underway to reduce conductivity at these stations.
- ◆ **TOTAL PHOSPHORUS:** Phosphorus levels at Stn. 1410.5 were average except for the June sampling event, when phosphorus levels spiked. Laboratory checklists note colored water and light sediment in the sample which could have contributed to the phosphorus level. Phosphorus levels at Stn. 1415 were average from May to July, and were also average in May and June at Stn. 1418. Phosphorus increased to slightly elevated levels at both stations from August through October and moderate amounts of organic matter was noted in most samples. Phosphorus levels were stable and low at Stn. 1420.
- ◆ **TURBIDITY:** Turbidity was low to average at Stns. 1410.5 and 1420. Turbidity at Stn. 1415 was slightly elevated in June and July, increased to elevated levels in August and September, and then decreased slightly in October. Water was generally colored with light to moderate sediment and organic matter noted by the laboratory during those months. Turbidity at Stn. 1418 was elevated in June, September and October with similar water conditions noted as Stn. 1415.
- ◆ **pH:** pH levels at Stns. 1410.5, 1418 and 1420 generally fluctuated below the desirable range 6.5-8.0 units. pH levels at Stn. 1415 were generally within the desirable range.
- ◆ **RECOMMENDED ACTIONS:** Conductivity levels at Stns. 1415 and 1418 are being monitored and addressed as mentioned above; keep up the great work! Water conditions were often noted as being brown with sediment and organic matter suggesting that potential wetland influences and/or streams with high organic content and leaching of tannic and humic acids causing fluctuations in phosphorus, pH and turbidity levels.

Table 1. 2014 Average Water Quality Data for Little Lake Sunapee Sub-Watershed

Sub-Watershed Name	Station Name	Cond.	Total P	Turb.	pH
		uS/cm	ug/l	ntu	
Kidder Brook Upstream	1410.5	19.9	12	0.94	6.32
Bucklin Beach Brook	1415	362.9	17	3.57	6.57
Murray Pond Outlet	1418	307.3	20	2.64	5.89
Little Lake Sunapee Outlet	1420	83.5	6	1.27	6.41

**NH Median Values:** Median values for specific parameters generated from historic lake monitoring data.

**Alkalinity:** 4.9 mg/L

**Chlorophyll-a:** 4.58 mg/m<sup>3</sup>

**Conductivity:** 40.0 uS/cm

**Chloride:** 4 mg/L

**Total Phosphorus:** 12 ug/L

**Transparency:** 3.2 m

**pH:** 6.6

**NH Water Quality Standards:** Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.

**Chloride:** > 230 mg/L (chronic)

**E. coli:** > 88 cts/100 mL – public beach

**E. coli:** > 406 cts/100 mL – surface waters

**Turbidity:** > 10 NTU above natural level

**pH:** between 6.5-8.0 (unless naturally occurring)



# VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

## LAKE SUNAPEE, NEWBURY INLET, CUNNINGHAM & BARTLETT BROOK SUB-WATERSHEDS

### 2014 DATA SUMMARY

#### OBSERVATIONS AND RECOMMENDATIONS *(Refer to Table 1 and Historical Deep Spot Data Graphics)*

- ◆ **CONDUCTIVITY/CHLORIDE:** Conductivity levels were slightly elevated at Stn. 720.1 and greater than the state median. Conductivity levels were low and less than the state median at Stn. 750. Conductivity levels were average and approximately equal to the state median at Stn. 760.
- ◆ **TOTAL PHOSPHORUS:** Phosphorus levels at Stn. 720.1 were average in May and September but slightly elevated in July and October following significant storm events. Phosphorus levels at Stn. 750 were stable and average from May through September. Phosphorus levels at Stn. 760 were stable and low from May through September.
- ◆ **TURBIDITY:** Turbidity at Stn. 720.1 was slightly elevated in July, September and October following storm events. Turbidity at Stns. 750 and 760 remained low on each sampling event.
- ◆ **pH:** pH levels generally fluctuated below the desirable range 6.5-8.0 units at all stations.
- ◆ **RECOMMENDED ACTIONS:** Phosphorus and turbidity levels increased at Stn 720.1 following significant storm events suggesting stormwater runoff and erosion in the sub-watershed. The increased frequency and intensity of storm events highlights the importance of managing stormwater runoff from residential and business properties, dirt/gravel roads, paved roads, parking lots and driveways, and agricultural properties. Water quality at Stns. 750 and 760 was generally good. Keep up the great work!

Table 1. 2014 Average Water Quality Data for Newbury Inlet, Cunningham & Bartlett Brook Sub-Watersheds

Sub-Watershed Name	Station Name	Cond.	Total P	Turb.	pH
		uS/cm	ug/l	ntu	
Newbury Inlet	720.1	84.3	17	1.59	5.77
Cunningham Brook	750	24.5	12	0.43	6.37
Bartlett Brook	760	59.2	5	0.58	6.21

**NH Median Values:** Median values for specific parameters generated from historic lake monitoring data.

**Alkalinity:** 4.9 mg/L

**Chlorophyll-a:** 4.58 mg/m<sup>3</sup>

**Conductivity:** 40.0 uS/cm

**Chloride:** 4 mg/L

**Total Phosphorus:** 12 ug/L

**Transparency:** 3.2 m

**pH:** 6.6

**NH Water Quality Standards:** Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.

**Chloride:** > 230 mg/L (chronic)

**E. coli:** > 88 cts/100 mL – public beach

**E. coli:** > 406 cts/100 mL – surface waters

**Turbidity:** > 10 NTU above natural level

**pH:** between 6.5-8.0 (unless naturally occurring)





# VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

## LAKE SUNAPEE, OTTER POND, LEDGE POND & EAGLE ROCK BROOKS, JOBS CREEK & OUTLET SUB-WATERSHEDS

### 2014 DATA SUMMARY

#### **OBSERVATIONS AND RECOMMENDATIONS** *(Refer to Table 1 and Historical Deep Spot Data Graphics)*

- ◆ **CONDUCTIVITY/CHLORIDE:** Conductivity was slightly elevated and greater than the state median at Stns. 505, 510 and 610 and remained relatively stable from May through October. Conductivity at Stn. 515.1 was elevated and much greater than the state median potentially due to iron deposits as well as local road salting. Stn. 540 conductivity was stable and low and less than the state median.
- ◆ **TOTAL PHOSPHORUS:** Phosphorus levels remained stable and low at Stns. 505, 510, 515.1, and 610 from May through October. Phosphorus levels at Stn. 540 were slightly elevated in June and July. Organic matter was noted in the June sample and July sampling followed a storm event.
- ◆ **TURBIDITY:** Turbidity was slightly elevated at Stn. 505 in October following a significant storm event. Turbidity remained low at Stns. 510 and 610 from May through October. Turbidity was elevated at Stn. 515.1 in June and organic matter was noted in the sample, and in July following a storm event. Turbidity was slightly elevated at Stn. 540 in June and organic matter was noted in the sample, and in October following a significant storm event.
- ◆ **pH:** pH levels at all stations were lower in May due to spring snowmelt and runoff. pH levels generally improved (increased) as the summer progressed at Stns. 505, 510, 515.1, and 610 and fluctuated within the desirable range 6.5-8.0 units. Stn. 540 pH levels were generally less than the desirable range.
- ◆ **RECOMMENDED ACTIONS:** Conduct chloride monitoring at Stn. 515.1 to establish a baseline data set and assess the impacts of road salting on tributary conductivity levels. Turbidity and phosphorus levels were slightly elevated at Stn. 540 following storm events and suggests the potential influence of wetland systems and/or stormwater runoff. The increased frequency and intensity of storm events highlights the importance of managing stormwater runoff in the sub-watershed. Educate watershed residents on ways to reduce stormwater runoff from their properties utilizing DES' "NH Homeowner's Guide to Stormwater Management". Keep up the great work!

Table 1. 2014 Average Water Quality Data for Otter Pond, Ledge Pond & Eagle Rock Brooks, Jobs Creek, Outlet					
Sub-Watershed Name	Station Name	Cond. uS/cm	Total P ug/l	Turb. ntu	pH
Otter Pond Brook	505	128.0	8	1.13	6.51
Ledge Pond/Muzzey Brook	510	130.0	9	0.51	6.50
Eagle Rock Brook	515.1	469.1	6	1.45	6.57
Jobs Creek	540	30.0	17	1.21	5.43
Outlet	610	91.4	5	0.43	6.50

**NH Median Values:** Median values for specific parameters generated from historic lake monitoring data.

**Alkalinity:** 4.9 mg/L

**Chlorophyll-a:** 4.58 mg/m<sup>3</sup>

**Conductivity:** 40.0 uS/cm

**Chloride:** 4 mg/L

**Total Phosphorus:** 12 ug/L

**Transparency:** 3.2 m

**pH:** 6.6

**NH Water Quality Standards:** Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.

**Chloride:** > 230 mg/L (chronic)

**E. coli:** > 88 cts/100 mL – public beach

**E. coli:** > 406 cts/100 mL – surface waters

**Turbidity:** > 10 NTU above natural level

**pH:** between 6.5-8.0 (unless naturally occurring)



## VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

### LAKE SUNAPEE, PIKE BROOK SUB-WATERSHED

#### 2014 DATA SUMMARY

##### OBSERVATIONS AND RECOMMENDATIONS (Refer to Table 1 and Historical Deep Spot Data Graphics)

- ◆ **CONDUCTIVITY/CHLORIDE:** Conductivity levels were slightly greater than the state median in Pike Brook and increased slightly from the upstream 800.8 to the downstream 800 stations. Conductivity levels were higher in August and September when tributary flows were low. Conductivity levels in King Hill Brook were greater than the state median and elevated in June.
- ◆ **TOTAL PHOSPHORUS:** Pike Brook Stn. 800 phosphorus levels were slightly elevated following rain events, however phosphorus levels remained within an average range for the station. Stations 800.5 and 800.8 phosphorus levels were in a low to average range and slightly elevated in July following a rain event. In general phosphorus levels increased slightly from upstream to downstream. King Hill Brook phosphorus levels were slightly elevated in July and August during low flows, and the samples were colored and contained a small amount of sediment and/or organic matter.
- ◆ **TURBIDITY:** Pike Brook turbidities were elevated at all stations following a storm event of greater than 1.5 inches of rainfall in October. King Hill Brook turbidity was elevated in May and August during low flow conditions.
- ◆ **pH:** Pike Brook and King Hill Brook pH levels were lower in May following snow melt and spring runoff and in July and August following significant storm events. pH levels at all stations fluctuated within and below the desirable range 6.5-8.0 units.
- ◆ **RECOMMENDED ACTIONS:** Turbidity and phosphorus generally increased from the upstream Stn. 800.8 to the downstream Stn. 800. Water color at Stn. 800 and 805, the downstream stations, were often noted as tea colored following rain events indicating flushing of wetland or other systems high in tannic, humic and fulvic acids which could affect pH levels, phosphorus and turbidity. Keep up the great work!

Table 1. 2014 Average Water Quality Data for PIKE BROOK SUB-WATERSHED

Sub-Watershed Name	Station Name	Cond. uS/cm	Total P ug/l	Turb. ntu	pH
Pike Brook	800	61.7	15	1.29	6.56
Pike Brook	800.5	54.6	11	0.90	6.36
Pike Brook	800.8	46.1	11	1.24	6.29
King Hill Brook	805	88.2	15	1.13	6.61

**NH Median Values:** Median values for specific parameters generated from historic lake monitoring data.

**Alkalinity:** 4.9 mg/L

**Chlorophyll-a:** 4.58 mg/m<sup>3</sup>

**Conductivity:** 40.0 uS/cm

**Chloride:** 4 mg/L

**Total Phosphorus:** 12 ug/L

**Transparency:** 3.2 m

**pH:** 6.6

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**E. coli:** > 406 cts/100 mL – surface waters

**Turbidity:** > 10 NTU above natural level

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